AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Currently Amended) A method for a performing stereo PIV on visualized flows ~~determining the imaging equation for self-calibration with regard to performing stereo-PIV methods on visualized flows~~, said method being comprised of:

providing first and second cameras and one image sector, with the cameras viewing approximately a same area of an illuminated section but from different directions;

performing a volume calibration using a calibration plate on said first and second cameras to obtain internal and external imaging parameters;

executing a self-calibration process prior to said performing said stereo PIV on visualized flows, said self-calibration process including optical cross-correlation comprising:

~~providing at least two cameras and one image sector, with the cameras viewing approximately a same area of an illuminated section but from different directions;~~

taking first and second images of flow particles in the same area simultaneously using respectively said first and second ~~camera~~

~~of the two~~ cameras, the first and second images respectively being divided into individual sections which are respectively ~~having~~ ~~corresponding~~ interrogation areas;

determining corresponding correlating ones of said interrogation areas respectively in the first image and the second image such that at least first and second corresponding correlating interrogation areas respectively of said first and second images are identified;

~~determining point correspondences between the two cameras~~ ~~by~~ measuring a respective displacement of ~~respective~~ said first and second corresponding correlating interrogation areas in the first and second images using optical cross-correlation in order to determine the imaging equation;

determining point correspondences of the first and second cameras based on the measured respective displacement; and

determining the imaging equation , including the imaging function M, for the first and second cameras by means of an approximation method, using ~~known~~ said internal and external camera parameters determined from said volume calibration and the point correspondences and the displacement of respective

interrogation areas ~~and the point correspondences and the displacement of respective interrogation areas~~ ; and

applying said imaging equation during a stereo PIV procedure on flowing particles of the visualized flow.

2. (Previously Presented) The method according to claim 1, wherein the internal camera parameters include focal length, position of optical axes (x_0, y_0) and distortion parameters of camera optics.

3. (Previously Presented) The method according to claim 1, wherein the external parameters include position and orientation of the cameras relative to each other.

4. (Previously Presented) The method according to claim 1, wherein if position of the illuminated section relative to a coordinate system of a known imaging equation is unknown, the position of the illuminated section is determined using the point correspondences.

5. (Previously Presented) The method according to claim 1, wherein if one or several of the internal camera parameters are known, other ones of the internal and

external camera parameters are determined using the point correspondences in order to thus determine the imaging equation.

6. (Currently Amended) The method according to claim 1, wherein the self-calibration process further ~~comprising~~ comprises:

taking two or more camera images respectively by the ~~at least two~~ first and second cameras at sequential times t_0 to t_n,

determining a two-dimensional correlation function c_0 (dx, dy) to c_n (dx, dy) by means of optical cross-correlation at each time t_0 to t_n using corresponding ones of the images,

adding up the correlation functions c_0 to c_n,

determining correlation peaks and a highest correlation peak, and

determining the displacement dx, dy of the respective one of the interrogation areas and, as a result thereof, the point correspondences being determined after based on the determination of the highest correlation peak.

7. (Previously Presented) The method according to claim 1, wherein the approximation method is based on the Levenberg-Marquardt algorithm.

8. (Previously Presented) The method according to claim 7, wherein the RANSAC algorithm is superimposed on the Levenberg-Marquardt algorithm.

9. (Currently Amended) The method according to claim 1, wherein each of the [[two]] first and second cameras takes in short succession two images and that additional point correspondences are determined using a cross-correlation between the images at the times t and t+dt.

10. (Currently Amended) The method according to claim 1, wherein optical axes of the ~~at least two~~ first and second cameras are disposed coplanar to each other.

11. (Previously Presented) The method according to claim 6, wherein a section thickness of illuminated sections corresponding to respective timings of the images is determined through a width of the correlation peaks and a geometrical factor and that, together with the position of the illuminated sections in space, said thickness serves to determine an overlap between the illuminated sections and whether they are suited for PIV measurement.

12. (Previously Presented) The method according to claim 5, wherein with assumption of focusing on the particles in the illuminated section during the approximation method, an image width is calculated as a function of focal length of objectives of the two cameras and of a spacing between the illuminated section and the two cameras and needs not be fitted as a result thereof.

13. (Previously Presented) The method according to claim 5, wherein if a Scheimpflug adapter is used and with assumption that said Scheimpflug adapter is optimally adjusted, an angle between a camera chip and a main axis and a position of a principal point on the camera chip are computed from the external image parameters and need not be fitted as a result thereof.

14. (Previously Presented) The method according to claim 6, wherein section thickness of the illuminated sections is determined through widths of the correlation peaks and image geometry and that, together with the positions of the illuminated sections in space, said section thickness serves to determine an overlap between the illuminated sections and whether they are suited for PIV measurement.